

DIRECTIVE NOTES

A. DESCRIPTION OF WORK AND SPECIFIC REQUIREMENTS AT EACH STRUCTURE AND RAMP.

FOLLOWING IS A DESCRIPTION OF THE WORK ASSOCIATED WITH EACH BIN ALONG WITH SPECIFIC REQUIREMENTS THAT APPLY. NEW CONCRETE DECK, JOINTS, CONCRETE BARRIER, STRUCTURAL STEEL, BEARINGS, BEARING PEDESTALS, PIERS, COLUMNS AND ALL OTHER STRUCTURAL COMPONENTS FOR EACH BIN LISTED BELOW SHALL COMPLY WITH PART 3, SECTION 14.3 AND ALL OTHER PROVISIONS OF THE RFP. ALL EXISTING LIGHTING AND STRIPING WITHIN LIMITS OF WORK SHALL BE REPLACED UNLESS OTHERWISE NOTED.

ALL HORIZONTAL ALIGNMENTS SHALL CONFORM TO THE DIRECTIVE PLANS.

INDICATIVE/DIRECTIVE PLAN SHEETS LISTED BELOW ARE NOT ALL INCLUSIVE.

ALL STATIONING IN DIRECTIVE NOTES IS APPROXIMATE

SHERIDAN CORRIDOR

1. BIN 1-06666-9 - BRUCKNER EXPRESSWAY TO/FROM SHERIDAN BOULEVARD (EXISTING RAMPS SB AND NB) TO BE MODIFIED FROM BENT 164 TO EXISTING NORTH ABUTMENT (PROPOSED RAMPS SS AND SN) AND AT-GRADE SECTION FROM EXISTING NORTH ABUTMENT TO STA ES 41+50:

1.1. GENERAL

1.1.1. EXISTING SHERIDAN RAMPS SB AND NB SHALL BE RESTRIPE. NEW STRIPING ON RAMP SB SHALL TIE INTO EXISTING STRIPING AT BENT 156 AND NEW STRIPING ON RAMP NB SHALL TIE INTO EXISTING STRIPING AT BENT 150.

1.1.2. EXISTING SHERIDAN RAMPS SB AND NB FROM BENT 164 TO EXISTING NORTH ABUTMENT SHALL BE MODIFIED AS SPECIFIED BELOW:

1.1.2.1. NEW RAMP SS SHALL PROVIDE CONNECTION BETWEEN THE EXISTING SOUTHBOUND SHERIDAN BOULEVARD AND THE EXISTING RAMP TO THE BRUCKNER EXPRESSWAY.

1.1.2.2. NEW RAMP SS SHALL HAVE ONE LANE.

1.1.2.3. NEW RAMP SN SHALL PROVIDE CONNECTION BETWEEN EXISTING RAMP FROM THE BRUCKNER EXPRESSWAY AND THE NORTHBOUND SHERIDAN BOULEVARD.

1.1.2.4. NEW RAMP SN SHALL HAVE TWO LANES. THE LEFT LANE SHALL CONNECT TO THE NORTHBOUND SHERIDAN AND THE RIGHT LANE SHALL BE TO THE NEW EXIT RAMP (RAMP SE).

1.1.3. AT-GRADE WORK ON THE NORTHBOUND AND SOUTHBOUND SHERIDAN BOULEVARD SHALL EXTEND FROM THE EXISTING NORTH ABUTMENT TO STA. ES 41+50 (SOUTH OF WESTCHESTER AVE OVERPASS).

1.1.4. REFER TO INDICATIVE DRAWINGS GP-1, GP-2, GP-11, GP-12, AND GP-13.

1.1.5. THE MEDIAN BARRIER BETWEEN RAMP SS AND RAMP SN SHALL BE SINGLE-SLOPE BARRIER. THE MEDIAN AREA BETWEEN THE TWO RAMPS SHALL BE FILLED AND GRADED FOR DRAINAGE.

1.1.6. ALL NEW SUBSTRUCTURE SHALL IMPOSE NO ADDITIONAL LOADING ON EXISTING 11'-0"X9'-9" BRICK SEWER LINE

1.1.7. CONTRACTOR SHALL PROVIDE ACCESS AND PROTECTION STRUCTURE FOR EXISTING 48" WATERMAIN RUNNING BETWEEN BENT 175 AND EXISTING NORTH ABUTMENT. STRUCTURE SHALL BE DESIGNED TO THE FOLLOWING REQUIREMENTS:

1.1.7.1. NO ADDITIONAL LOADING SHALL BE IMPOSED ON WATERMAIN.

1.1.7.2. AN OPENING SHALL BE PROVIDED FOR ACCESS AND MAINTENANCE FOR THE FULL LENGTH OF THE WATERMAIN UNDER THE NEW FILL STRUCTURES. PROTECTIVE STRUCTURE SHALL BE ON A DEEP FOUNDATION. THE DESIGN OF THE OPENING MUST MAINTAIN AT LEAST 15' HORIZONTAL CLEARANCE FROM THE OUTSIDE EDGE OF THE WATERMAIN TO THE INSIDE EDGE OF THE PROPOSED STRUCTURE FOUNDATION. MINIMUM VERTICAL CLEARANCE SHALL BE 9' FOR RAMP SN, 7' FOR RAMP SS, AND AS APPROVED BY NYCDEP.

1.1.7.3 THE ACCESS ROUTE SHALL BE SECURED BY INWARD OPENING GATES WITH LOCKS. FIVE KEYS SHALL BE PROVIDED. THE DESIGN-BUILDER SHALL POST A SIGN WITH CONTACT INFORMATION (INCLUDING PHONE NUMBER).

1.1.8. PROVIDE HMA PAVEMENT FOR THE FULL WIDTH OF THE AREA AS FOLLOWS, 12" SUBBASE, 6" HMA DENSE GRADED BASE COURSE, 2" BINDER COURSE, AND 1" TOP COURSE FOR THE AREA BELOW THE STRUCTURE FROM PIER 164 TO THE BEGIN ABUTMENT NORTH OF PIER 167. ADDITIONALLY, INSTALL STEEL PICKET FENCE TO ENCLOSE THE AREA.

1.2. NEW RAMP SS

1.2.1. BENT 164 SHALL REMAIN IN PLACE AND SHALL BE ANALYZED PER THE REQUIREMENTS FOR REHABILITATED SUBSTRUCTURES IN PART 3. RESULTS OF THE ANALYSIS SHALL BE PROVIDED TO THE DEPARTMENT DURING FINAL DESIGN. IF THE DEPARTMENT DEEMS NECESSARY, STRENGTHENING WILL BE PAID FOR BY FORCE ACCOUNT.

1.2.2. BENT 165 SHALL BE REMOVED AND REPLACED, INCLUDING FOOTINGS. AS OUTLINED IN SECTION 1.4

1.2.3. BENT 166 TO BENT 175 AND THE EXISTING NORTH ABUTMENT SHALL BE DEMOLISHED.

1.2.4. A NEW ABUTMENT FOR BIN 1-06666-9 SHALL BE CONSTRUCTED NORTH OF BENT 167 ON DEEP FOUNDATIONS. NO DRIVEN FOUNDATIONS WILL BE ALLOWED. A MINIMUM 15' HORIZONTAL CLEARANCE SHALL BE MAINTAINED FROM THE OUTSIDE EDGE OF THE 11'-0"X9'-9" BRICK SEWER LINE TO THE EDGE OF THE PROPOSED STRUCTURE FOUNDATION. THIS ABUTMENT SHALL BE A FIXED FRAME ABUTMENT AS DESCRIBED IN ARTICLE 11.2.1 OF THE NYSDOT BRIDGE MANUAL.

1.2.5. CONCRETE DECK AND PARAPETS BETWEEN BENT 164 AND BENT 165 SHALL BE REMOVED AND REPLACED WITH NEW CONCRETE DECK AND SINGLE SLOPE BARRIERS.

1.2.6. SUPERSTRUCTURE STEEL BETWEEN BENT 164 AND 165 SHALL REMAIN. SUPERSTRUCTURE STEEL SHALL BE MODIFIED TO ACCOMMODATE PROPOSED CHANGES TO CROSS-SLOPE AND ELEVATION.

1.2.7. CONCRETE DECK AND SUPERSTRUCTURE STEEL FROM BENT 165 TO THE EXISTING NORTH ABUTMENT SHALL BE DEMOLISHED.

1.2.8. NEW STEEL SUPERSTRUCTURE AND CONCRETE DECK WITH SINGLE SLOPE CONCRETE BARRIERS SHALL BE PROVIDED BETWEEN BENT 165 TO THE NEW ABUTMENT. STRUCTURE OUT-TO-OUT WIDTH SHALL BE 28'-0".

1.2.9. NEW RAMP SS, FROM THE NEW ABUTMENT TO THE EXISTING NORTH ABUTMENT, SHALL BE AT-GRADE PCC PAVEMENT ON FILL WITH ASSOCIATED RETAINING WALLS AND SINGLE-SLOPE CONCRETE BARRIER.

1.2.10. NEW RAMP SS, FROM THE EXISTING NORTH ABUTMENT TO STA. ES 36+50, SHALL BE AT-GRADE PCC PAVEMENT WITH SINGLE-SLOPE CONCRETE BARRIER THAT JOINS WITH EXISTING BARRIER AT STA. ES 35+75. NEW PCC PAVEMENT SHALL BE GRADED TO MATCH EXISTING PAVEMENT.

1.2.11. EXISTING RETAINING WALL FROM STA. ES 35+60 THROUGH NORTHERN PROJECT LIMITS SHALL REMAIN.

1.2.12. FROM THE EXISTING NORTH ABUTMENT TO STA. SS 127+20, EXISTING BARRIER AND FENCING ON SINGLE SLOPE BARRIER SHALL BE REMOVED AND NEW FENCING SHALL BE PROVIDED ON BARRIER SEPARATING NEW RAMP SS FROM NYCT RIGHT-OF-WAY.

1.2.13. WHEN CONSTRUCTING FACILITIES ADJACENT TO THE NYCT TRANSIT LINE, REFER TO PART 3 - PROJECT REQUIREMENTS AND PART 5 - SPECIAL PROVISIONS FOR REQUIREMENTS.

1.2.14. EXISTING PCC PAVEMENT SHALL RECEIVE OVERLAY FROM STA. ES 36+50 TO STA. ES 41+55.

1.3. NEW RAMP SN

1.3.1. BENT 164 SHALL REMAIN IN PLACE AND SHALL BE ANALYZED PER THE REQUIREMENTS FOR REHABILITATED SUBSTRUCTURES IN PART 3. RESULTS OF THE ANALYSIS SHALL BE PROVIDED TO THE DEPARTMENT DURING FINAL DESIGN. IF THE DEPARTMENT DEEMS NECESSARY, STRENGTHENING WILL BE PAID FOR BY FORCE ACCOUNT.

1.3.2. BENT 165 SHALL BE REMOVED AND REPLACED, INCLUDING FOOTINGS. AS OUTLINED IN SECTION 1.4

1.3.3. BENT 166 TO BENT 175 AND THE EXISTING NORTH ABUTMENT SHALL BE DEMOLISHED.

1.3.4. A NEW ABUTMENT FOR BIN 1-06666-9 SHALL BE CONSTRUCTED NORTH OF BENT 167 ON DEEP FOUNDATIONS. NO DRIVEN FOUNDATIONS WILL BE ALLOWED. A MINIMUM 15' HORIZONTAL CLEARANCE SHALL BE MAINTAINED FROM THE OUTSIDE EDGE OF THE 11'-0"X9'-9" BRICK SEWER LINE TO THE EDGE OF THE PROPOSED STRUCTURE FOUNDATION. THE ABUTMENT SHALL BE IN LINE WITH THE NEW ABUTMENT CONSTRUCTED FOR NEW RAMP SS. THIS ABUTMENT SHALL BE A FIXED FRAME ABUTMENT AS DESCRIBED IN ARTICLE 11.2.1 OF THE NYSDOT BRIDGE MANUAL.

1.3.5. CONCRETE DECK AND PARAPET BETWEEN BENT 164 AND BENT 165 SHALL BE REMOVED AND REPLACED WITH NEW CONCRETE DECK AND SINGLE SLOPE CONCRETE BARRIERS.

1.3.6. SUPERSTRUCTURE STEEL BETWEEN BENT 164 AND 165 SHALL REMAIN, EXCEPT THAT THE STRINGERS OUTSIDE THE LIMITS OF NEW BENT 165 SHALL BE DEMOLISHED. SUPERSTRUCTURE STEEL SHALL BE MODIFIED TO ACCOMMODATE PROPOSED CHANGES TO CROSS-SLOPE AND ELEVATION.

1.3.7. CONCRETE DECK AND SUPERSTRUCTURE STEEL FROM BENT 165 TO THE EXISTING NORTH ABUTMENT SHALL BE DEMOLISHED.

1.3.8. NEW STEEL SUPERSTRUCTURE AND CONCRETE DECK WITH SINGLE SLOPE CONCRETE BARRIERS SHALL BE PROVIDED BETWEEN BENT 165 TO THE NEW ABUTMENT. STRUCTURE OUT-TO-OUT WIDTH SHALL VARY FROM 38'-0" TO APPROXIMATELY 47'-0" TO MEET PROPOSED RAMP SE.

1.3.9. NEW RAMP SN, FROM THE NEW ABUTMENT TO STA. ES 36+50 SHALL BE AT-GRADE PCC PAVEMENT ON FILL WITH ASSOCIATED RETAINING WALLS AND SINGLE-SLOPE CONCRETE BARRIER. RECONSTRUCT EXISTING PAVEMENT WITHIN RAMP SN LIMITS BETWEEN ES 31+80 TO ES 36+50.

1.3.10. AT-GRADE PCC PAVEMENT SHALL BE CONSTRUCTED AT THE ENTRANCE OF NEW RAMP SE, FROM THE NEW ABUTMENT TO THE NEW RAMP SE ABUTMENT AT STA. SE 12+70.

1.3.11. NEW RAMP SN SHALL BE AT-GRADE PCC PAVEMENT WITH SINGLE-SLOPE CONCRETE BARRIER. NEW PCC PAVEMENT SHALL BE GRADED TO MATCH EXISTING PAVEMENT.

1.3.12. WHEN CONSTRUCTING FACILITIES ADJACENT TO OR ABOVE THE AMTRAK AND CSX RAILROAD TRACKS AND CATENARIES, REFER TO PART 3 - PROJECT REQUIREMENTS AND PART 5 - SPECIAL PROVISIONS FOR REQUIREMENTS.

1.3.13. EXISTING PCC PAVEMENT SHALL RECEIVE OVERLAY FROM STA. ES 36+50 TO STA. ES 41+50

1.3.14. NOTE THAT THE PROPOSED RETAINING WALL ON THE EAST SIDE OF NEW RAMP SN SHALL BE COORDINATED WITH THE PROPOSED ABUTMENT FOR NEW RAMP SE.

1.4. DESIGN REQUIREMENTS FOR BENT 165

1.4.1. NEW PIER 165 SHALL MEET THE FOLLOWING REQUIREMENTS:

1.4.1.1. THE PIER CAP, COLUMNS, AND FOUNDATION SHALL BE DESIGNED TO MEET ALL CONDITIONS OF THIS CONTRACT AND CONTRACT 3 (SEE DIRECTIVE PLANS).

1.4.1.2. WHEN DESIGNING FOR THE CONTRACT 3 CONDITION, IT SHALL BE ASSUMED THAT THE SOUTHERN SPANS OF RAMPS SS AND SN ARE SUPPORTED BY MULTI-ROTATIONAL BEARINGS. THE MR BEARINGS SHALL BE ASSUMED TO GENERATE A FRICTION FORCE EQUAL TO 5% OF THE APPLIED VERTICAL LOAD.

1.4.1.3. THE REQUIREMENT TO PERFORM A SEISMIC ANALYSIS IS WAIVED. ALL OTHER SEISMIC PROVISIONS SHALL APPLY.

1.4.1.4. THE LOAD FACTORS GIVEN IN TABLE 3.4.1-1 OF THE NYSDOT LRFD BRIDGE DESIGN SPECIFICATIONS SHALL BE MODIFIED TO ACCOUNT FOR THE UNCERTAINTIES OF CONTRACT 3. THE LOAD FACTORS SHALL EITHER BE INCREASED OR DECREASED BY 33%, WHICHEVER RESULTS IN THE CONTROLLING LOAD EFFECT. FOR EXAMPLE, THE MAXIMUM DC LOAD FACTOR SHALL BE 1.66 (EXCLUDING STRENGTH IV) AND THE MINIMUM DC LOAD FACTOR SHALL BE 0.60.

1.4.1.5. FOR ANY LOAD COMBINATION THAT RESULTS IN AN UPWARD VERTICAL REACTION (I.E. UPLIFT), THE VERTICAL REACTION SHALL BE IGNORED.

1.4.1.6. THE TOP OF PIER CAP ELEVATIONS SHALL BE AS SHOWN ON DRAWING REF-02 OF THE DIRECTIVE PLANS. THE PIER CAP WIDTH SHALL BE ADEQUATE FOR BOTH THIS CONTRACT AND THE CONTRACT 3 CONDITIONS.

1.4.1.7. PAINTED STEEL BOLSTERS SHALL BE USED INSTEAD OF CONCRETE PEDESTALS TO SUPPORT THE RECONFIGURED SPAN BETWEEN PIERS 164 AND 165.

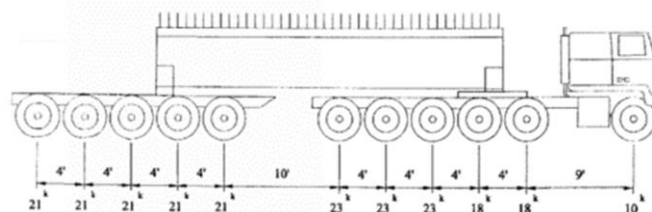
1.4.1.8. FOR ADDITIONAL INFORMATION TO BE USED FOR THE DESIGN OF PIER 165 REFER TO DRAWINGS REF-01 THRU REF-06 AND RAMP SS AND SN CSI MODELS PROVIDED IN THE REFERENCE DOCUMENTS. THE DESIGN-BUILDER SHALL NOT USE THESE CSI MODELS FOR GENERATING THE LOADS ACTING ON PIER 165.

D900047, HPI Contract 1
RFP Part 6 Directive Plans

AFFIX SEAL: ON:		ALTERED BY: ON:		<div>D900047, HPI Contract 1 RFP Part 6 Directive Plans</div>						

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- Pier 165 will consist of dual hammerhead piers that meet all the RFP design requirements. The pier caps, columns, and foundations will be designed to meet all conditions of this contract and Contract 3 as shown in directive plan GN-1 and REF-01
- For the Contract 3 condition, it is assumed that the southern spans of Ramps SS and SN are supported by multi-rotational bearings. The MR bearings are assumed to generate a friction force equal to 5% of the applied vertical load.
- The requirement to perform a seismic analysis has been waived. All other seismic provisions shall apply.
- The load factors given in table 3.4.1-1 of the NYSDOT LRFD Bridge Design Specifications have been modified to account for the uncertainties of Contract 3. The load factors were either increased or decreased by 33%, whichever resulted in the controlling load effect.
- For any load combination that resulted in an upward vertical reaction (i.e. uplift), the vertical reaction was ignored.
- Painted steel bolsters are used instead of concrete pedestals to support the reconfigured span between Piers 164 and 165.
- Stainless Steel Reinforcement will be utilized at all exposed surfaces of bridge seats, all bearing pedestals, and backwalls and pier caps below expansion joints.
- **New substructure concrete**
 - ♦ Cast-in-place concrete for the piers and end abutment (except footings) shall have a minimum compressive strength of 5000 psi at 28 days.
 - ♦ Cast-in-place concrete for the Pier 165 footing and the end abutment footing shall have a minimum compressive strength of 8000 psi at 28 days.
- **New Reinforcement**
 - ♦ Reinforcement in the pier cap and pedestals shall be Grade 75 stainless steel. Reinforcement in the pier columns and abutment stem shall be Grade 60 epoxy coated steel. Reinforcement in the footings shall be Grade 60 uncoated (plain) steel.
- **Design Loads**
 - Load Modifiers
 - ♦ The modifiers of 1.0 for ductility, redundancy and operational importance are assumed for all AASHTO LRFD load combinations.
 - ♦ Load Factors and Load Combinations
 - ♦ The design limit states and corresponding load factors and combinations are in accordance with AASHTO LRFD 3.4.
 - Permanent Loads
 - ♦ Dead Loads (DC, DW and EV) - the calculation of dead loads shall conform to Section 3.5.1 of AASHTO LRFD.
 - ♦ Earth Loads (EH, ES and DD) – the calculation of earth loads shall conform to Section 3.5.2 of AASHTO LRFD.
 - Live Loads
 - ♦ Live loads (LL and PL) shall follow AASHTO LRFD 3.6.1
 - ♦ Vehicular live load (LL) shall use HL-93 with IM=15% for fatigue and fracture limit state and IM=33% for all other limit states for new superstructures.
 - The NYSDOT Design Permit Vehicle is a design vehicular load to be applied to the “Strength II” limit state. The weights and spacing of axles for NYSDOT design permit vehicle shall be as shown:



- ♦ The transverse spacing of wheels shall be taken as 6.0 ft. The dynamic load allowance shall be applied as specified in Article 3.6.2.
- Braking Force (BR)
 - ♦ The BR for all structural components shall be in accordance with AASHTO LRFD.
- Wind Loading
 - ♦ WS and WL shall be in accordance with Section 3.8.1.2 & 3.8.1.3 of AASHTO LRFD.
- Thermal Loading
 - ♦ Reference Temperature: 68°F
 - ♦ Uniform Temperature (TU) – AASHTO LRFD 3.12.2.2 Procedure B with temperature range from 0°F to 110°F
 - ♦ Temperature Gradient (TG) – AASHTO LRFD 3.12.3
- Seismic Loads
 - ♦ Seismic analysis is waived for Pier 165 per RFP Part 6 Directive Drawing No. GN-1 Section 1.4.1.3.
- **Foundations:** Based on results obtained from FB-MultiPier, proposed micropiles will be designed structurally and geotechnically in accordance with corresponding provisions in the NYSDOT LRFD Bridge Design Specifications (Blue Pages) and the NYSDOT Geotechnical Design Manual.

Micropiles will be structurally checked for axial loading per AASHTO LRFD Bridge Design Specification Section 10.9. Combined axial and bending will be checked using the software Cross Section Analysis and Design by Engissol, which considers the composite section capacity. In accordance with FHWA provisions for micropiles, 50% reduction of the intact casing wall thickness will be considered for bending and tension calculations due to threaded joints. Resistance factors for structural design will be applied in accordance with AASHTO Table 10.5.5.2.5-2.

The design of new micropiles will consider the effect of corrosion and deterioration from environmental conditions. The design will assume a 1/10" thick loss of the permanent steel casing. Per FHWA Micropile Design and Construction Manual Section 5.14.3.3, Table 5-6, in addition to the omission of casing for tension capacity as noted in Section 9.1, the top of the core threadbar will be epoxy-coated or galvanized to a minimum of 5 feet into the casing at micropiles with uplift loads

The geotechnical capacity of a micropile will be derived from side friction (bond) along the length of the rock socket. Resistance factors per AASHTO Table 10.5.5.2.5.1 will be applied to factored design loads.